

## CLAIMS

What is claimed is:

- 1 1. A method for accessing an instance of a recreatable object in a shorter-duration  
2 memory based on a reference located in a longer-duration memory, wherein the  
3 shorter-duration memory is associated with a call, the method comprising the steps of:  
4 locating, within the shorter-duration memory, a context structure associated with the  
5 call;  
6 locating an XREF pointers array based on data cached within the context structure;  
7 determining whether the XREF pointers array includes a pointer associated with said  
8 reference; and  
9 if the XREF pointers array includes a pointer associated with said reference, then  
10 following said pointer to locate said instance within said shorter-duration  
11 memory.
- 1 2. The method of Claim 1 wherein the step of locating an XREF pointers array based on  
2 data cached within the context structure comprises the steps of:  
3 determining a hash code associated with a memory page in which the XREF is  
4 located;  
5 using at least a portion of the hash code as an index to locate an array entry within an  
6 array stored within the context structure; and  
7 if said array entry contains a pointer, then following said pointer stored in said array  
8 entry to locate said XREF pointers array.

1 3. The method of Claim 2 wherein:  
2 the array is a power-of-two array; and  
3 the portion of said hash code that is used as said index includes a particular number of  
4 bits of said hash code.

1 4. The method of Claim 1 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the method further comprises the steps of  
4 creating said instance by activating said recreatable object; and  
5 storing a pointer to said instance in said XREF pointers array.

1 5. The method of Claim 2 wherein:  
2 if said array entry does not contain a pointer, then creating said instance by activating  
3 said recreatable object; and  
4 storing a pointer to said instance in said array entry.

1 6. A method for accessing an instance of a recreatable object in shorter-duration memory  
2 based on a reference located in a longer-duration memory, wherein the shorter-  
3 duration memory is associated with a call, the method comprising the steps of:  
4 when a class is activated, generating, within said shorter-duration memory, a class  
5 object associated with the class;  
6 storing, within said class object, data for locating instances of recreatable objects  
7 associated with said class;

8 to dereference said reference, performing the steps of  
9 determining that said reference is associated with said class; and  
10 using said data within said class object to locate said instance of said  
11 recreatable object.

1 7. The method of Claim 6 wherein the step of storing, within said class object, data for  
2 locating instances is performed by storing, within said class object, a pointer to an  
3 XREF pointers array.

4 8. The method of Claim 7 wherein the step of using said data within object to locate said  
5 instance includes the steps of:  
6 determining whether the XREF pointers array includes a pointer associated with said  
7 reference;  
8 if the XREF pointers array includes a pointer associated with said reference, then  
9 following said pointer to locate said instance within said shorter-duration  
10 memory.

1 9. The method of Claim 8 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the method further comprises the steps of  
4 creating said instance by activating said recreatable object; and  
5 storing a pointer to said instance in said XREF pointers array.

1 10. A computer-readable medium carrying instructions for accessing an instance of a  
 2 recreatable object in a shorter-duration memory based on a reference located in a  
 3 longer-duration memory, wherein the shorter-duration memory is associated with a  
 4 call, the computer-readable medium comprising instructions for performing the steps  
 5 of:  
 6 locating, within the shorter-duration memory, a context structure associated with the  
 7 call;  
 8 locating an XREF pointers array based on data cached within the context structure;  
 9 determining whether the XREF pointers array includes a pointer associated with said  
 10 reference; and  
 11 if the XREF pointers array includes a pointer associated with said reference, then  
 12 following said pointer to locate said instance within said shorter-duration  
 13 memory.

1 11. The computer-readable medium of Claim 10 wherein the step of locating an XREF  
 2 pointers array based on data cached within the context structure comprises the steps  
 3 of:  
 4 determining a hash code associated with a memory page in which the XREF is  
 5 located;  
 6 using at least a portion of the hash code as an index to locate an array entry within an  
 7 array stored within the context structure; and  
 8 if said array entry contains a pointer, then following said pointer stored in said array  
 9 entry to locate said XREF pointers array.

1 12. The computer-readable medium of Claim 11 wherein:  
2 the array is a power-of-two array; and  
3 the portion of said hash code that is used as said index includes a particular number of  
4 bits of said hash code.

1 13. The computer-readable medium of Claim 10 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the computer-readable medium further comprises instructions for performing the steps  
4 of  
5 creating said instance by activating said recreatable object; and  
6 storing a pointer to said instance in said XREF pointers array.

1 14. The computer-readable medium of Claim 11 further comprising instructions for  
2 performing the steps of:  
3 if said array entry does not contain a pointer, then creating said instance by activating  
4 said recreatable object; and  
5 storing a pointer to said instance in said array entry.

1 15. A computer-readable medium carrying instructions for accessing an instance of a  
2 recreatable object in shorter-duration memory based on a reference located in a  
3 longer-duration memory, wherein the shorter-duration memory is associated with a  
4 call, the computer-readable medium comprising instructions for performing the steps  
5 of:

6 when a class is activated, generating, within said shorter-duration memory, a class  
7 object associated with the class;  
8 storing, within said class object, data for locating instances of recreatable objects  
9 associated with said class;  
10 to dereference said reference, performing the steps of  
11 determining that said reference is associated with said class; and  
12 using said data within said class object to locate said instance of said  
13 recreatable object.

1 16. The computer-readable medium of Claim 15 wherein the step of storing, within said  
2 class object, data for locating instances is performed by storing, within said class  
3 *a* object, a pointer to an XREF pointers array.

1 17. The computer-readable medium of Claim 16 wherein the step of using said data  
2 within object to locate said instance includes the steps of:  
3 determining whether the XREF pointers array includes a pointer associated with said  
4 reference;  
5 if the XREF pointers array includes a pointer associated with said reference, then  
6 following said pointer to locate said instance within said shorter-duration  
7 memory.

1 18. The computer-readable medium of Claim 17 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and

3 the computer-readable medium further comprises instructions for performing the steps  
4 of  
5 creating said instance by activating said recreatable object; and  
6 storing a pointer to said instance in said XREF pointers array.

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For reference